



## **Polices to address the “Drivers” or act on the “Limits”?**

International approaches and perspectives for Denmark

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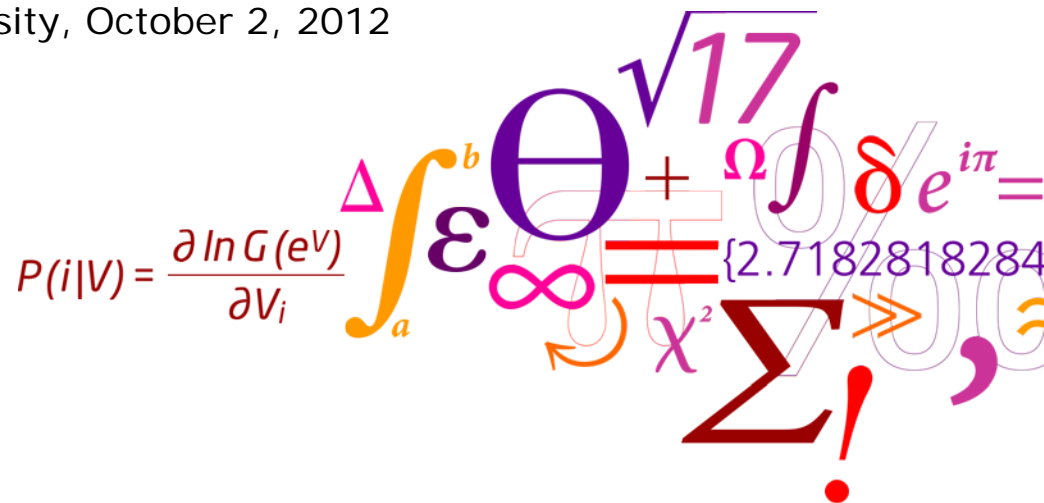
# Polices to address the “Drivers” or act on the “Limits”?

## - International approaches and perspectives for Denmark

Henrik Gudmundsson, Maria J. Figueroa, DTU Transport

Policy implications of trends in travel behaviour

Public Seminar, Danish Technical University, October 2, 2012



# Overview

- 1) The 'Drivers and Limits' concept
- 2) International approaches to transport policy assessment
- 3) 'Jumping' to policy conclusions?
- 4) Danish Policy Context – some indicators and assumptions
- 5) Policy Topics Associated with some of the Drivers and Limits Findings
- 6) Preliminary observations and points for discussion

## Drivers

### Demography

- Age
- Generation
- Gender
- Health
- Attitude

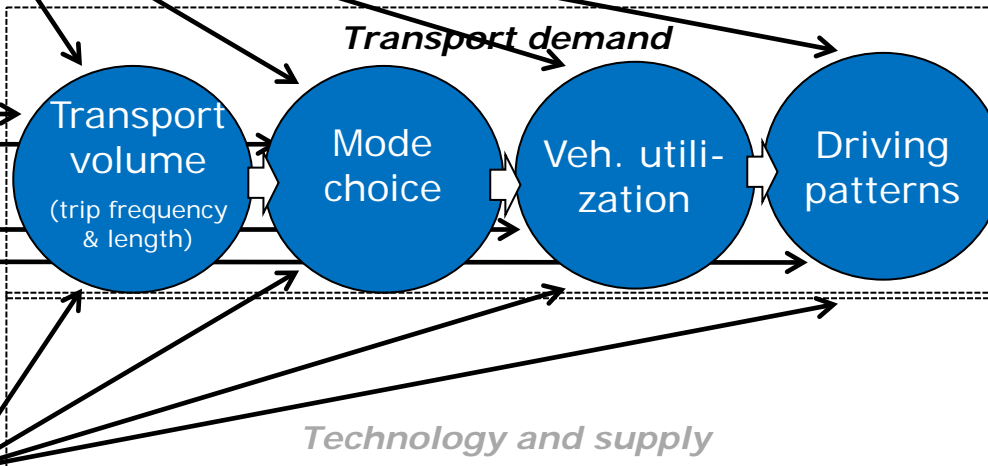
### Economy

- Income
- Prices
- Housing market
- Labor market
- Logistics

### Geography

- Distance
- Density
- Centricity
- Form

## Intermediate transport variables



## Outputs and outcomes

Mobility

Limits

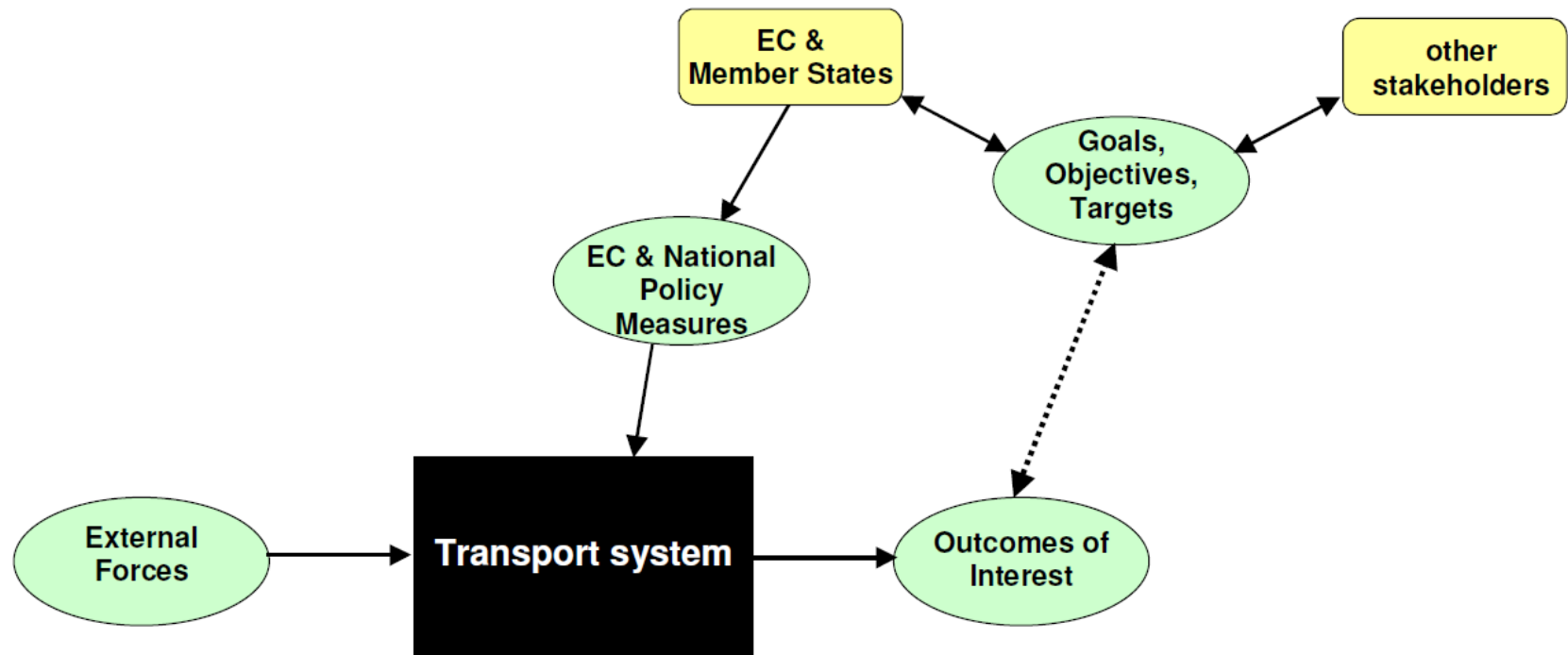
Traffic

Limits

Climate Change

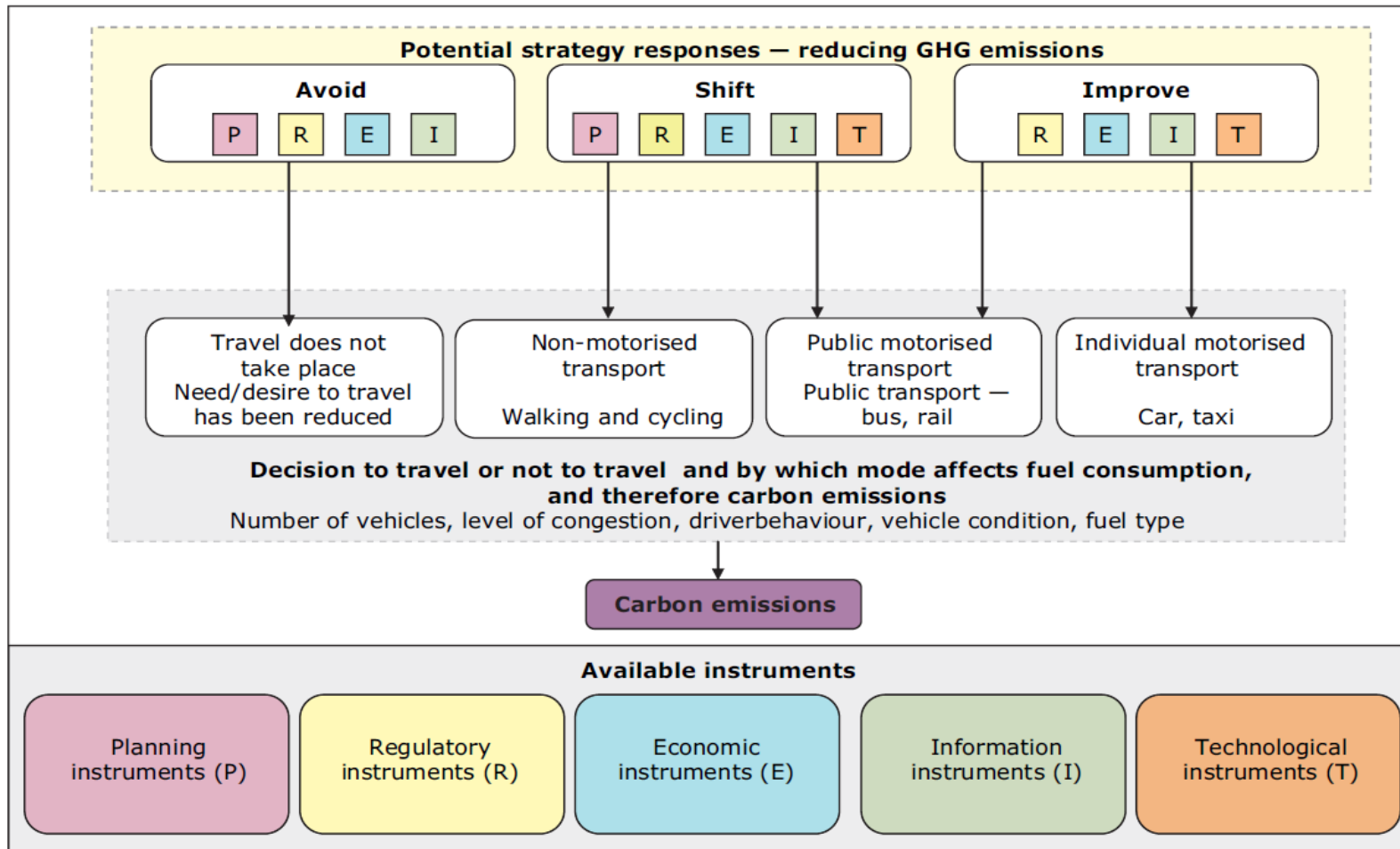
# International approaches (1)

Sustainable transport policy assessment framework (*Rand Europe et al 2004*)



# International approaches (2)

## Avoid-Shift-Improve approach to Low-Carbon Transport (EEA 2010)



# International approaches (3)

Dominant relationships between transport policy instruments and sustainability (*van Wee et al 2012*)

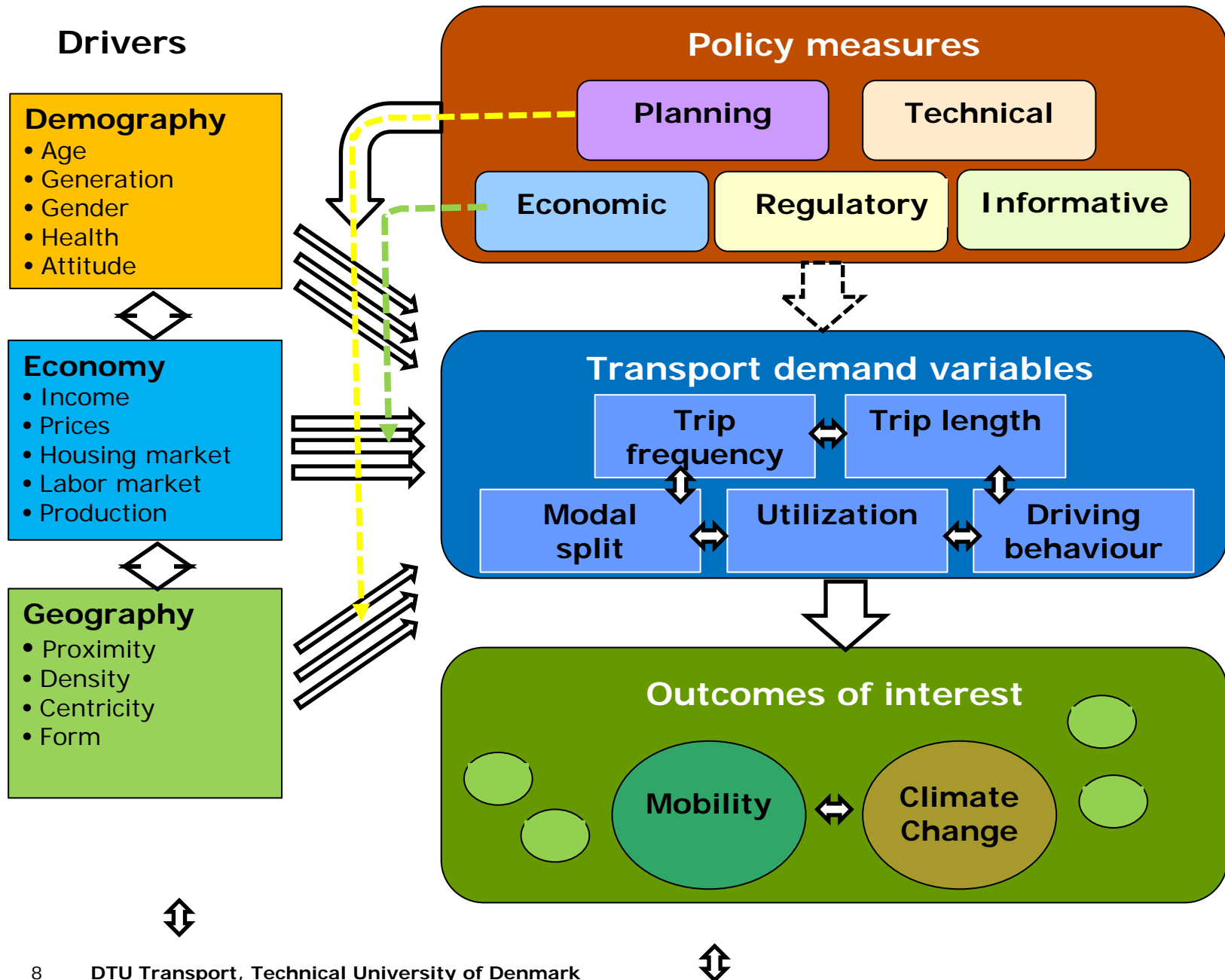
	Volume	Modal Split	Utilization	Driving Behaviour	Technology
Traffic restrictions	X	X	X	X	X
Pricing policies	X	X	X	X	X
Land-use planning	X	X		X	
Public transport promotion	X	X	X		
Infrastructure invest.	X	X		X	
Marketing		X			
Info and communic.	X	X	X	X	

# International approaches (4)

Planning Policies contributing to Sustainability and Transport Goals in The Global Energy Assessment (*Kahn Ribeiro, et al 2012*)

GEA Overall	Sustainable	Policies Aim: Developing Alternatives to Car Use and Reducing Need for Travel										
Systemic Goals	Multiple Goals and Benefits for a Sustainable Transport System	Compact, Mixed Use Development	Regional Transit Oriented Development	Urban Design for Walkability	Create safe conditions for use of Non-motorized modes	Create Car-Free Zones. Calming- Parking	Improve Public Transport Access-Reliability	Increase Services of Low-Cost Mass Transit System (BRT)	Management of Urban Traffic System ITS-	Modal Shift Air to Rail long distance	Improve Logistics road freight transport	Shift Intercity Freight to rail and water transport
Economic Growth, & Equity	Functionality, Efficiency											
	Accessibility											
	Affordability											
	Acceptability											
Health &	Traffic Safety											
	Acces of less fit											
Environmental Protection	Human Motion Promotion											
	Reduce Air Pollution											
	Reduce Noise											
	Reduce Congestion											
Climate	Reduce GHG											
Energy Security	Diversification Energy sources											
	Independence from Fossil fuels											





# 'Jumping' to policy conclusions?

- Complexity of interactions; potential for conflicts and failures
- Different roles and needs for knowledge in policy making
- Limitations to evidence (methods of knowledge production) and to the policy appreciation of evidence
- Context matters (e.g national)

# Complexity of interactions

- Demographic, Economic, Geographical Drivers may influence or modify one another
- The way Drivers influence transport systems may change over time
- Technology is a significant factor influencing transport system variables and outcomes
- Policy instruments may not be implemented in the way they were intended

# Different roles for knowledge in policy

'Normal' roles	Use of knowledge
Agenda setting	<ul style="list-style-type: none"> <li>•Signal emerging or neglected areas</li> <li>•Screen validity of interest group claims</li> </ul>
Developing new policies	<ul style="list-style-type: none"> <li>•Generate ideas; options</li> <li>•Reduce uncertainty</li> </ul>
Modifying existing policies	<ul style="list-style-type: none"> <li>•Ongoing program improvement</li> <li>•Enhance accountability for outcomes</li> </ul>

*Adapted from Lomas & Brown (2009)*

Challenge 'policy myths'	Examples in transport area
<i>Button (2005)</i>	<ul style="list-style-type: none"> <li>'Transport is different'</li> <li>'You can build away the problems'</li> <li>'Subsidized travel helps the poor'</li> </ul>

# Limitations to knowledge methods

Method	Some pros and cons for policy
Detailed controlled experiments	<ul style="list-style-type: none"> <li>+ evidence for the design of policy measures</li> <li>- difficult to conduct in transport</li> <li>- hard to generalize beyond specific context?</li> </ul>
Statistical modelling	<ul style="list-style-type: none"> <li>+ can provide strong numerical evidence</li> <li>- Proving causality may be a problem?</li> </ul>
Prospective scenario building	<ul style="list-style-type: none"> <li>+ provides structured overview of options</li> <li>- highly sensitive to assumptions?</li> </ul>
Critical examination of existing assumptions	<ul style="list-style-type: none"> <li>+ defuse myths</li> <li>- may be perceived as biased?</li> </ul>

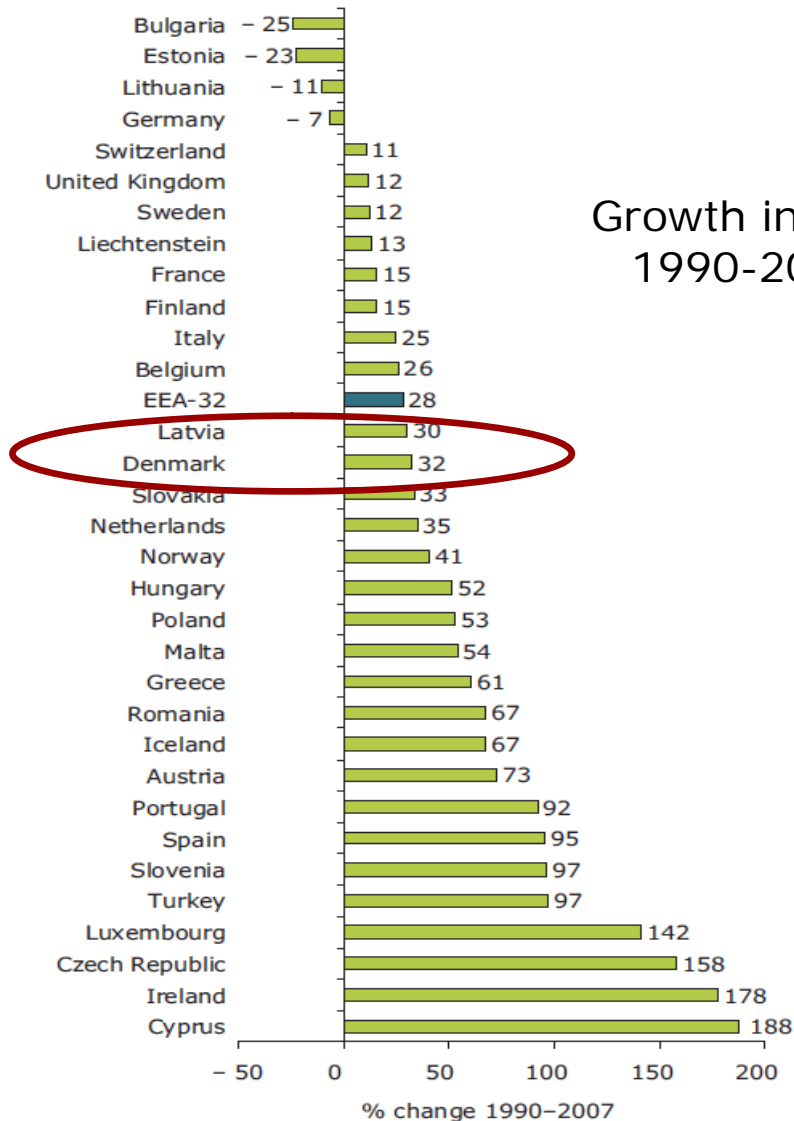
# Limits to policy appreciation of knowledge

Cash et al (2003) found that the following factors must be present simultaneously for knowledge/evidence to be appreciated:

- *Credibility*, that is, the scientific adequacy of the technical evidence and arguments.
- *Salience*, that is, the evidence is relevant of the assessment to the needs of decision makers.
- *Legitimacy*. meaning that the production of information has been respectful of stakeholders' divergent values and beliefs, and fair in its treatment of opposing interests.

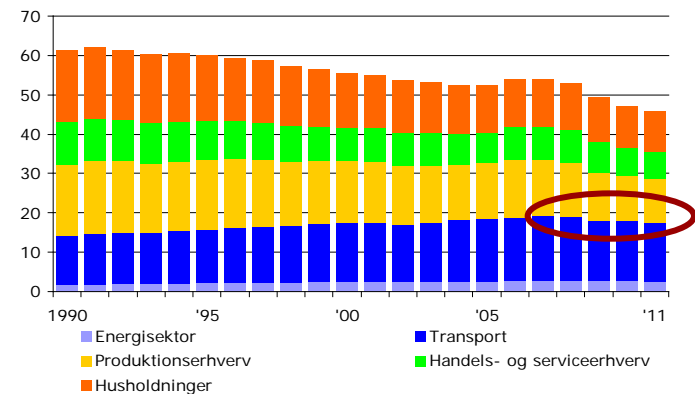
"Efforts to enhance any one normally incur a cost to the other"

# Danish transport policy context (1)



Growth in transport GHG Emissions Europe  
1990-2007 (EEA 2010)

Transport CO2 DK 1990-2011  
(DEA2010)



# Danish transport policy context (2)

Rank	Prev. Year	City	Country	Congestion	Morning peak	Evening peak	Highways	Non-Highways
1	1	--- Warsaw	Poland	42%	89%	86%	39%	45%
2	2	--- Madrid	Spain	42%	89%	81%	23%	52%
3	3	--- Rome	Italy	34%	76%	66%	24%	40%
4	4	--- Brussels	Belgium	34%	82%	86%	27%	40%
5	6	▲ Paris	France	32%	72%	63%	29%	36%
6	5	▼ Dublin	Ireland	30%	70%	62%	23%	42%
7	19	▲ Bradford-Leeds	United Kingdom	28%	63%	60%	23%	34%
8	9	▲ London	United Kingdom	27%	48%	50%	10%	38%
9	8	▼ Stockholm	Sweden	27%	65%	62%	22%	32%
10	11	▲ Hamburg	Germany	27%	49%	42%	17%	35%
11	12	▲ Cologne	Germany	26%	54%	47%	24%	32%
12	7	▼ Milan	Italy	26%	71%	53%	18%	32%
13	15	▲ Berlin	Germany	26%	42%	44%	22%	29%
14	17	▲ Vienna	Austria	24%	42%	43%	16%	31%
15	14	▼ Oslo	Norway	24%	41%	43%	10%	37%
16	13	▼ Naples	Italy	24%	34%	43%	10%	37%
17	18	▲ Turin	Italy	23%	50%	42%	11%	29%
18	22	▲ Munich	Germany	23%	50%	36%	17%	33%
19	23	▲ Birmingham	United Kingdom	21%	51%	43%	14%	32%
20	24	▲ Luxembourg	Luxembourg	21%	51%	47%	12%	34%
21	16	▼ Barcelona	Spain	21%	49%	39%	14%	24%
22	10	▼ Lisbon	Portugal	20%	41%	49%	9%	21%
23	21	▼ Helsinki	Finland	20%	43%	43%	15%	26%
24	20	▼ Prague	Czech Republic	20%	46%	31%	13%	27%
25	26	★ Ruhr region west	Germany	17%	38%	28%	13%	28%
26	29	▲ Copenhagen	Denmark	16%	42%	29%	5%	26%
27	27	--- Madrid	Spain	16%	41%	33%	9%	23%
28	30	▲ Ruhr region east	Germany	15%	31%	28%	11%	24%
29	25	▼ Amsterdam	Netherlands	15%	33%	31%	8%	28%
30	28	▼ Valencia	Spain	14%	21%	21%	7%	23%
31	31	--- Bern	Switzerland	8%	19%	31%	0%	30%

TomTom Congestion Index European 2012



# Danish transport policy context (3)



Bæredygtig transport  
– bedre infrastruktur

Fingerplan 2007  
Landsplandirektiv for  
hovedstadsområdets planlægning

Aftale mellem regeringen (Venstre og De  
aldemokraterne, Dansk Folkeparti, So  
Det Radikale Venstre og Libera

En grøn transportpol

Bedre mobilitet

26. november 2010

Den 22. marts 2012

Aftale  
mellem regeringen (Socialdemokraterne, Det Radikale Venstre, Socialistisk  
Folkeparti) og Venstre, Dansk Folkeparti, Enhedslisten og Det Konservative  
Folkeparti

om den danske energipolitik 2012-2020

Partierne er enige om, at omstillingen til et Danmark med en energiforsyning dækket af vedvarende  
energi kræver på tværs af stabile og langsigtede rammer om den danske energipolitik. Med disse  
aftale fastlægges konkrete energipolitiske initiativer for perioden 2012-2020. Aftalen vil understøtte  
fælles EU-målsætninger.

Aftalens hovedindhold:

- Aftalen dækker perioden 2012-2020.
- Partierne gør årligt status for aftale nye initiativer, og de vil blive offentliggjort som initiativer, der løser ud.
- Regeringen gør årligt status for realiserede besparelser og de forventede besparelser som følge af regeringens  
realisering, forpligter partierne sig til at tilvejebringe et  
samlagt, justeret energieffektiviseringsudkast til  
Partierne mødes i 2015 for at drøfte videreførelse af  
hensender udvælgelse af 60 mio. kr. årligt fra energi  
2015.
- Partierne forpligter sig til inden udgangen af 2018 at  
supplerende initiativer for perioden efter 2020.

Med henblik på at opfylde aftalens formål er partierne enige

Et energieffektivt samfund med mindre energiforbrug  
Realisering af målet om en energiforsyning dækket af vedvarende  
energieffektivisering, som minimerer energiforbruget og energ  
aktører sig, at det med finansloven er besluttet at udføre en  
bølger i 2013 og 2014. Partierne er derudover enige om følgende:

- Energieffektiviseringsforpligtelse og nye i forhold  
svarende til 10,7 PJ pr. år i perioden 2013-2014 og med  
perioden 2015-2020
- I forbindelse med de nye energieffektiviseringsforpligtelse  
eksisterende bygninger og erhverv. Der stiles med udgang  
med energieffektivisering, som styrkes konkurrencedygtig  
mio. kr. i 2012-2015 til understøttelse af energieffektivisering



# Danish transport policy context (4)

## Some - key goals and assumptions

- To develop a greener transport system can take place jointly with economic growth and a high level of mobility
- Public transport is to absorb most of future growth in demand
- Complete independence of fossil fuels over the long term
- Technical solutions to GHG emissions a main priority in transport
- Regional planning, in particular location policies, have potential to help limit congestion, promote use of public transport and cycling, and limit climate impact of travel
- 'Strategic studies' at the regional level (e.g. Copenhagen, Mid-jutland) is the way to identify the most relevant infrastructure projects

# Policy Topics Associated with some of the Drivers and Limits Findings



# Policy Aspects related to Demographics

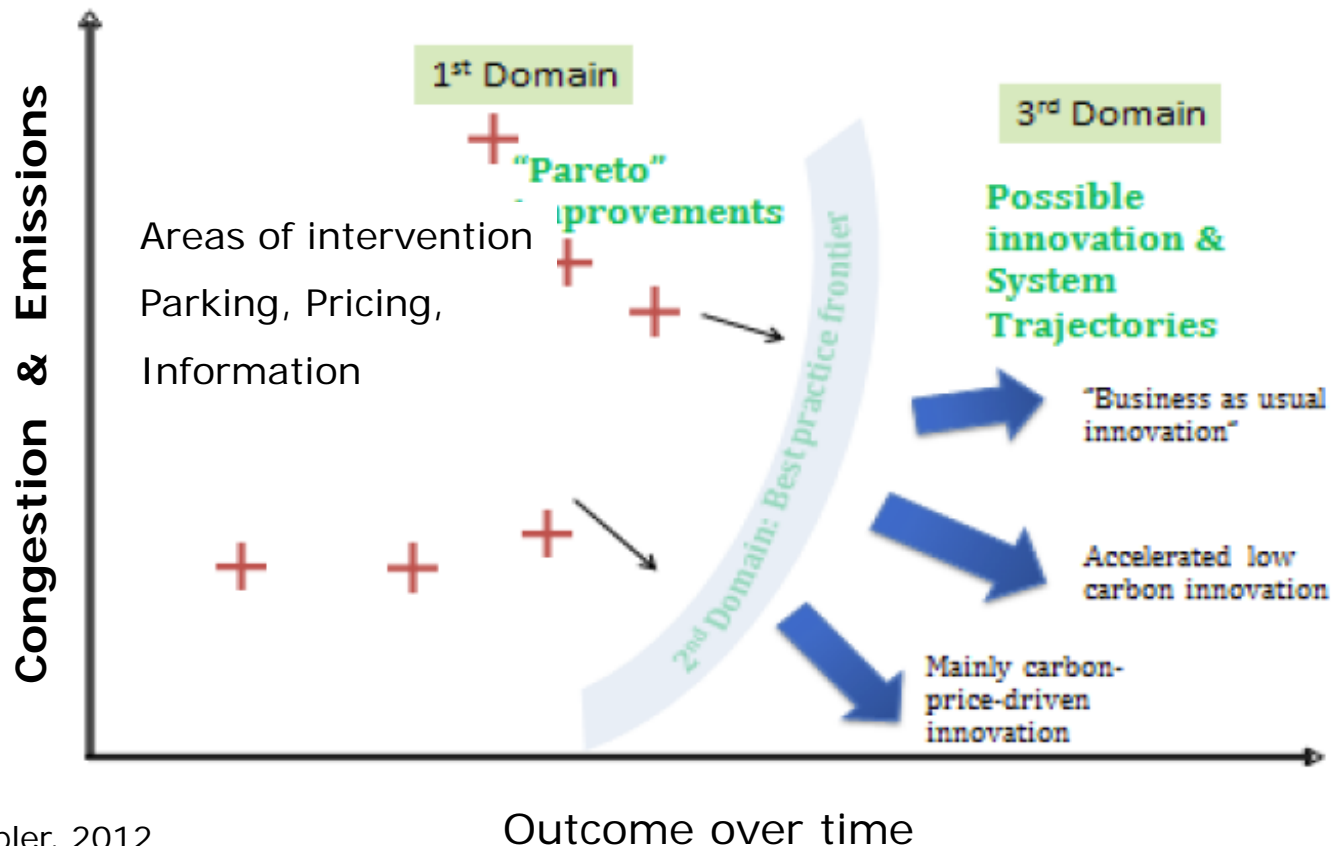
- **Aspects no subject to change:** Gender, Age, Dissability, proportion of baby boomers; women longer lifespan,
- **Aspects Subject to change:** Attitudes-responses, Willingness to accept, willigness to pay, choices (modes, routes, nr trips, technologies), patterns.

*Link to policy advice concerning behavioral change and goals  
reducing car use; modal choice change, public acceptance of policies and  
of new technologies*

# Policy aspects related urban structure, location and travel

- **Role of Urban Structure/Location on Distance:** distance to regional centers, and greater number of subcenters, with variations over time explaining commuting and non-work travel distances.
- **Role of Accessibility on Travel:** more links, faster cheaper services, proximity of opportunities, quality of opportunities, information and communication technologies (ICT's); and also by human capabilities (health, economic) to take advantages of it all.
- **Role of urban structure and location on Mobility:** collectively spatial and structural variables such as: density, diversity, design, destination, distance to transit, demand management elements of "systems" of mobility and enhanced when Technology and ICT involved!

# Policy Aspects/Domains related to different economic processes, goals and time frame



Source: Grubler, 2012

# Policy/research Gaps crossing Land Use – location and Demographic research ..

Baby Boomers/ Location	Gender	Ageing	Socio-Econ Status
Mobility -	Travel Differences, Who drives? Understanding tours:  Logistic pressure	Independent mobility,  Competing claims for resources.  Logistic Pressure	Car/License possession, use.  ICT possession- a substitute for travel?
Accessibility	Transaction cost- Escorting Economies	Access to health	Inclusion/Exclu sions

## Some preliminary observations

- Confirming that variation of demographic, economic and geographic factors jointly drive and influence a range of transport system variables
- Generally confirming that demand for mobility and pressure on infrastructure and climate are likely to increase in the future
- Impacts are however likely to vary with time, location, and socio-demographic groups, and may not increase in a linear way
- Inter-relations are complex



## Some questions

- 1) Where can we find synergies versus conflicts between measures to enhance mobility and limit impact on the climate?
- 2) Is there a need for more radical policies to change spatial or behavioural factors, to avoid harm to mobility and climate?
- 3) Are there any 'policy myths' that could be punctured?
- 4) Can technology be addressed as a separate ('add-on') policy issue, or is it more integrated with demand variables?

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